REMARKS

Applicant is in receipt of the Office Action mailed December 23, 2005. Claims 1, 11, 13, and 33 have been amended. No new matter has been added. Claims 1-50 remain pending in this case. Reconsideration of the present case is earnestly requested in light of the following remarks.

Information Disclosure Statement

The Examiner has asserted that non-patent references A24 through A44 in the IDS received 10/06/2004 were not available for review. The Examiner also asserted that the non-patent literature "Software Environment for WASMII" by Chen et al. in the IDS received 11/03/2004 was not legible. The cited references have been resubmitted with the instant Office Action Response.

Double Patenting Rejections

Claims 1-50 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-59 of U.S. Patent No. 6,219,628 B1 to Kodosky et al. ("Kodosky"), in view of US Patent 5,005,119 to Rumbaugh et al. ("Rumbaugh").

Upon reviewing the pertinent art, Applicant respectfully submits that the instant claims are patentably distinct and non-obvious over Kodosky in view of Rumbaugh.

As an example, the Examiner suggests that the instant claims map to method claims 1-21 in Kodosky. Applicant respectfully disagrees. Kodosky discloses "A computer-implemented method for configuring an instrument to perform a measurement function, wherein the instrument includes a programmable hardware element". Additionally, examination of Rumbaugh reveals the capability for "'user selection' of icons on the display for use in a program". However, nowhere does Kodosky or Rumbaugh teach a reconfigurable system with one or more fixed hardware resources coupled to the programmable hardware element. More specifically, the references fail to teach "displaying a graphical user interface on a display which is useable for configuring

the reconfigurable system, wherein the graphical user interface displays *fixed hardware resource icons corresponding to each of at least a subset of the one or more fixed hardware resources*" and "deploying the hardware configuration program on the programmable hardware element, wherein the *hardware configuration program specifies use of one or more of the fixed hardware resources*".

Regarding the arguments above, in the instant Office Action, the Examiner asserted:

> Examiner disagrees. Kodosky ('628), col. 2, line 60, recites, "graphical program...may include other **icons which represent devices being controlled.**" (emphasis added) This is referencing Kodosky USPN 4,901,221 (col. 2, line 24) which is incorporated by reference at col. 6, line 34. USPN 6,219,628 disclosed (col. 4, lines 11-17), "automatically generating hardware level functionality, e.g., programmable hardware...in response to a graphical program....to develop or define instrument functionality..." The instant application has defined "**fixed hardware resources**" **to include (Specification, page 6)** "**counters, timers, A/D converters, signal conditioning logic, computer interface logic, etc.**" **and (Specification, page 32)** "**physical I/O resources such as analog to digital converters (ADCs), digital to analog converters (DACs), and digital lines, among others...**" (emphasis added) Thus, reasonably, Kodosky has disclosed a graphical user interface on a display, which displays fixed hardware resource icons coupled to the programmable hardware element.

> Regarding the limitation: "deploying the hardware configuration program on the programmable hardware element, wherein the hardware configuration program specifies use of one or more of the fixed hardware resources." Kodosky ('628), col. 12, lines 46-48, recite, "operates to transfer the FPGA program file to the programmable hardware element, e.g., the FPGA, to produce a programmed hardware equivalent to the graphical program (which includes icons representing fixes hardware resources, as noted above)."

Applicant respectfully disagrees. Applicant also notes that the parenthetical statement above "(which includes icons representing fixes hardware resources, as noted above)" was provided by the Examiner and was not cited from Kodosky ('628). Regarding the Examiner's assertion, "thus, reasonably, Kodosky has disclosed a graphical user interface on a display, which displays fixed hardware resource icons

coupled to the programmable hardware element", Applicant respectfully submits that the Examiner is speculating as to the functionality provided by Kodosky, which is **improper**.

The Examiner relies on a portion of the statement, *"the front panel* includes various front panel objects, such as controls or indicators that represent the respective input and output that will be used by the graphical program or VI, and *may include other icons which represent devices being controlled"* (emphasis added). The Examiner seems to imply that this statement necessarily discloses that the graphical user interface displays *fixed hardware resource icons corresponding to each of at least a subset of the one or more fixed hardware resources*, i.e., those coupled to the programmable hardware element. Applicant respectfully submits that the above cited statement, or any other section of Kodosky, fails to indicate this functionality, and furthermore, that the Examiner has failed to provide any evidence that this feature is necessarily present in *Kodosky's* system. According to M.P.E.P. 2131.01 III, "[s]uch evidence must make clear that the missing descriptive matter is **necessarily** present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." Applicant respectfully submits that the Examiner has not provided anything but the Examiner's own opinion that the functionality relied upon by the Examiner is inherent in *Kodosky*. The Examiner must provide extrinsic evidence that such functionality is necessarily a part of *Kodosky's* system.

Furthermore, Applicant submits the above cited statement may have numerous interpretations. For instance, the front panel display may simply include an icon that represents an oscillator, a voltmeter, or any of various other instruments. Applicant submits that one skilled in the art of electronic instruments understands that instruments are not fixed hardware resources as described in the specification, and that an icon representing a device does not necessarily represent fixed hardware resources.

Thus, Applicant respectfully submits that the Examiner is speculating as to the functionality of Kodosky without providing any specific citation or teaching that discloses *wherein the reconfigurable system comprises a programmable hardware element and one or more fixed hardware resources coupled to the programmable hardware element, and wherein **the graphical user interface displays fixed hardware***

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resource icons corresponding to each of at least a subset of the one or more fixed *hardware resources*, or even fixed hardware resources at all.

With regard to the Examiner's second assertion, Applicant notes that Kodosky describes a system and method to implement a graphical program onto a hardware device, such as, for example, a programmable hardware element. However, Applicant respectfully submits that Kodosky nowhere describes, teaches, or suggests *wherein the hardware configuration program specifies use of one or more of the fixed hardware resources*. As argued above, Kodosky fails to disclose or mention fixed hardware resources coupled to the programmable hardware element, and, as also argued above, Kodosky fails to disclose displaying fixed hardware resources coupled to the programmable hardware element.

Furthermore, similar to above, Applicant respectfully submits that icons representing devices on the front panel of the graphical program does not correlate to deploying the hardware configuration on the programmable hardware interface specifying the use of one or more fixed hardware resources coupled to the programmable hardware element. Applicant submits, similar to above, that the Examiner has not provided any reason to support the assertion that Kodsoky discloses *wherein the hardware configuration program specifies use of one or more of the fixed hardware resources*, other than the Examiner's own opinion.

Thus, for at least the reasons provided above, Applicant submits that Kodosky does not and cannot teach or suggest *wherein the hardware configuration program specifies use of one or more of the fixed hardware resources*.

Thus, for at least the reasons provided above, Applicant submits that Kodosky and Rumbaugh, taken singly or in combination, fail to teach all the features and limitations of claim 1, and so Applicant submits that claim 1 and those claims dependent therefrom are patentably distinct and non-obvious over the cited art, and are thus allowable.

Claims 11, 13, 21, 31, 33, and 41 include similar limitations as claim 1, and so the above arguments apply with equal force to these claims. Thus, for at least the reasons provided above, Applicant submits that claims 11, 13, 21, 31, 33, and 41, and those

claims respectively dependent therefrom, are patentably distinct and non-obvious, and are thus allowable.

Thus, Applicant submits that for at least these reasons claims 1-50 are patentably distinct and non-obvious over Kodosky in view of Rumbaugh, and are thus allowable.

Applicant respectively requests removal of the judicially created doctrine of obviousness-type double patenting rejection of claims 1-50.

Section 103 Rejections

Claims 1, 3-21, 23-41, and 43-50 were rejected under 35 U.S.C. 103(a) as being unpatentable over WO 94/15311 to Duncan ("Duncan"), in view of "A Software Development System for FPGA-Based Data Acquisition Systems" by Alan Wenban and Geoffrey Brown ("Wenban").

Claims 2, 22, and 42 were rejected under 35 U.S.C. 103(a) as being unpatentable over Duncan in view of Wenban in further view of Rumbaugh.

Amended claim 1 recites:

1. A method for configuring a reconfigurable system, the method comprising:

displaying a graphical user interface on a display which is useable for configuring the reconfigurable system, wherein the reconfigurable system comprises a programmable hardware element and one or more fixed hardware resources coupled to the programmable hardware element, and wherein the graphical user interface displays fixed hardware resource icons corresponding to each of at least a subset of the one or more fixed hardware resources;

receiving user input to the graphical user interface specifying a function;

generating a hardware configuration program based on the user input, wherein the hardware configuration program is deployable on the reconfigurable system; and

deploying the hardware configuration program on the programmable hardware element, wherein the hardware configuration program specifies use of one or more of the fixed hardware resources;

wherein, after said deploying, the reconfigurable system is operable to perform the function.

The Examiner asserts that Duncan and Wenban teach all of the features and limitations of claim 1. Applicant respectfully disagrees. For example, the Examiner asserts that the cited art describes a "reconfigurable system that comprises a programmable hardware element and one or more fixed hardware resources coupled to the programmable hardware element", citing Duncan page 1, lines 6-8 and page 11, line 36-page 12, line 1. Applicant submits that Duncan nowhere discloses a reconfigurable system comprising a programmable hardware element and *one or more fixed hardware resources coupled to the programmable hardware element*. In fact, Duncan fails to mention or even hint at fixed hardware resources at all.

The Examiner further asserts that Duncan discloses "displaying a graphical user interface on a display which is useable for configuring the reconfigurable system, wherein the graphical user interface displays fixed hardware resource icons corresponding to each of at least a subset of the one or more fixed hardware resources", citing Duncan page 12, lines 20-23 and page 56, lines 6-7. Applicant submits that the cited text actually discloses the use of a library of icons representing simple designs for deployment to an FPGA. Nowhere does Duncan disclose a graphical user interface that displays *fixed hardware resource icons corresponding to each of at least a subset of the one or more fixed hardware resources*.

The Examiner admits that Duncan fails to teach "deploying the hardware configuration program on the programmable hardware element, wherein the hardware configuration program specifies use of one or more of the fixed hardware resources", but asserts that Wenban remedies this citing page 36, #2 and #3. Applicant submits that the cited text actually describes a method by which an FPGA could be reconfigured using a boot-strap loading of the reconfiguration data stored within on-board SRAM. Neither Wenban nor Duncan discloses any method for deploying the hardware configuration program on the programmable hardware element, wherein the hardware configuration program *specifies use of one or more of the fixed hardware resources*.

Regarding the arguments above, in the instant Office Action, the Examiner asserted that the above cited features of instant claim 1 were not given patentable weight because they are recited in the preamble. Applicant has amended claims 1 and 11 to address this matter of form, and notes that **no new matter has been added.**

With further regard to the above arguments, the Examiner asserts:

> As noted in the rejection of claim 1 below, Duncan disclosed a computer aided design for programming programmable integrated circuits. Duncan disclosed a schematic component library. Page 3, line 13, "Schematic diagrams are descriptions of the physical components and interconnections of a circuit." Page 4, lines 1-5 "A schematic component is comprised of two parts: a schematic symbol (icon) which is displayed on a video monitor, and an underlying circuit design (fixed hardware resource) which defines the function of the schematic component." The configurable/programmable hardware element (integrated circuits) and related schematic components are entered using a schematic capture package (Abstract) and displayed on a monitor.

Regarding this assertion, Applicant respectfully reminds the Examiner that the section regarding the schematic components recites (page 3, lines 30 – page 4, line 17):

> As shown in Fig. 2, a schematic capture package 1000 typically includes several software tools including a component generator 1010, a schematic editor 1020, a display generator 1030, and a netlist generator 1040. A netlist is a computer memory file including a list of components (logic gates, flip flops, etc.) and interconnections between components which represent a circuit design. **The component generator 1010 allows a user to define and store schematic components in a schematic component library 1015.** A schematic component is comprised of two parts: a schematic symbol which is displayed on a video monitor, and an underlying circuit design which defines the function of the schematic component. Schematic components are recognized by the schematic capture package as representing the functions of their underlying circuit designs. After a schematic component library 1015 is generated, the schematic editor 1020 is used to copy schematic components from the library and to connect the schematic components to form a circuit design which is stored in a schematic diagram file 1025. During the process of forming a schematic diagram, the display generator 1030 reads the schematic diagram file 1025 and converts the circuit design into a netlist 1050.

Thus, in Duncan, a user my define circuit elements as a component and store them in a library for use in circuit design. More specifically, a circuit may be designed using a

plurality of these components, and then further implemented onto a programmable hardware element via a netlist.

In light of the descriptions above, Applicant respectfully submits that one skilled in the art of programmable circuits understands that **software components** representing circuits to be implemented **on a programmable hardware element** are not **fixed hardware resources coupled to the programmable hardware element**.

The Examiner also asserts that Duncan discloses *a graphical user interface that displays fixed hardware resource icons corresponding to each of at least a subset of the one or more fixed hardware resources*, in reference to the schematic components described above. Applicant respectfully submits, as argued above, that schematic components are not fixed hardware resources. With further regard to this feature, the Examiner asserts:

> Duncan disclosed (page 11, last sentence – page 12, line 1), 'Schematic components include...**counters**, registers and flip-flops.' (emphasis added) Applicant has defined '**fixed hardware resources**' to include (Specification, page 6) '**counters.**'

Applicant respectfully submits that **software components** representing counter circuitry to be implemented **on** a programmable hardware element are not **fixed hardware resources**, e.g., counters, **coupled to** the programmable hardware element.

The Examiner further asserts that Duncan in view of Wenban teaches *deploying the hardware configuration program on the programmable hardware element, wherein the hardware configuration program specifies use of one or more of the fixed hardware resources*. More specifically, the Examiner relies on the arguments above. As argued above, Applicant submits that schematic components, i.e., software components representing circuitry, that is implemented on a programmable hardware element, is not a fixed hardware resource coupled to the programmable hardware element.

Furthermore, Applicant respectfully submits that neither Duncan nor Wenban provides a motivation to combine, and that the Examiner's suggested motivation to

combine: "to provide more explicit details regarding the deployment of programmable code onto a hardware resource" is not a proper motivation and notes that Wenban's "more specific example" of deploying programmable code onto a hardware resource does not disclose aspects of the present invention related to fixed hardware resources, as recited in claim 1. Neither Wenban nor Duncan mentions these claimed features, and further, neither reference indicates or even hints at the desirability of these features. Thus, Applicant respectfully submits that the attempted combination of these references is improper. Moreover, even were Duncan and Wenban properly combinable, which Applicant argues they are not, the resulting combination would still not produce Applicant's invention as represented in claim 1, as argued at length above.

Thus, for at least the reasons provided above, Applicant respectfully submits that Duncan and Wenban, taken singly or in combination, fail to teach all the features and limitations of claim 1, and so Applicant submits that claim 1 and those claims dependent therefrom are patentably distinct and non-obvious over the cited art, and are thus allowable.

Claims 11, 13, 21, 31, 33, and 41 include similar limitations as claim 1, and so the above arguments apply with equal force to these claims. Thus, for at least the reasons provided above, Applicant submits that claims 11, 13, 21, 31, 33, and 41, and those claims respectively dependent therefrom, are patentably distinct and non-obvious, and are thus allowable.

Applicant respectfully requests removal of the section 103 rejection of claims 1, 3-21, 23-41, and 43-50.

Applicant also asserts that numerous ones of the dependent claims recite further distinctions over the cited art. However, since the independent claims have been shown to be patentably distinct, a further discussion of the dependent claims is not necessary at this time.

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CONCLUSION

In light of the foregoing amendments and remarks, Applicant submits the application is now in condition for allowance, and an early notice to that effect is requested.

If any extensions of time (under 37 C.F.R. § 1.136) are necessary to prevent the above referenced application(s) from becoming abandoned, Applicant(s) hereby petition for such extensions. If any fees are due, the Commissioner is authorized to charge said fees to Meyertons, Hood, Kivlin, Kowert & Goetzel PC Deposit Account No. 50-1505/5150-63500/JCH.

Also enclosed herewith are the following items:

☒ Return Receipt Postcard
☒ Request For Continued Examination
☒ Information Disclosure Statement
☒ References A24 – A44, C12, and E1

Respectfully submitted,

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